

Notice of Allowability

Application No.

10/669,918

Examiner

Rita Leykin

Applicant(s)

SCHULZ ET AL.

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1-18.
3. ☒ The drawings filed on 24 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date ____
- ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Interview Summary (PTO-413), Paper No./Mail Date ____
- ☐ Examiner's Amendment/Comment
- ☒ Examiner's Statement of Reasons for Allowance
- ☐ Other ____

RITA LEYKIN**PRIMARY EXAMINER***Rita Leykin 9/17/04*

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: The prior art made of record in the attached form PTO-892 considered to be pertinent to the submitted application.

Fu US 2004/0007995 teaches a vector control system for permanent magnet motor using open-loop parameter observer.

Wherein the torque parameters are provided from the open loop observer circuit, which is manipulated to produce an AC voltage command to be applied to PM motor.

The vector values such "d" current and "q" current that are responsible for production of magnetic field, magnetic flux and production of torque. The electromagnetic torque is defined via PM flux linkage in synchronous frame and PM flux linkage in stationary frame V/sec. The reference coordinate frames of the system are the stationary reference frame, and synchronous rotating reference frame. Equivalence between these reference frames gives the proper governing equations that are provided in [0030] through [0061]. Wherein values of motor angular velocity, flux linkage in synchronous and stationary frames are used.

In [0063] the open loop observer circuit 22 shown in Fig. 1 takes dc bus voltage, motor phase currents as transformed by the vector rotation translator 28, and the sine and cosine of the measured rotor electrical position as measured by position converter 26 as inputs.

Based on provided equations the open loop observer estimates the electrical parameters required to properly convert torque commands into machine current commands, preferably the values of magnetic flux linkage and q-axis inductance.

Marcinkiewicz in US# 2002/0149331 teaches a flux feedback controller system provided with a flux observer adapted to produce a signal indicative of flux-causing voltage across the phase winding and based on received flux command as an input to provide a phase coil energization signal as an output. Wherein in [0175] the output of inverse current model 330 is derived from the value of the three observer fluxes and rotor angle.

However, none of the prior art teaches or suggests the claimed combination of:

- A vector cross product calculator that generates an error signal that is proportional to an angular difference between an estimated stator flux and computed stator flux;
- A proportional integral controller that generates an estimated rotor angular position based on that error signal;

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

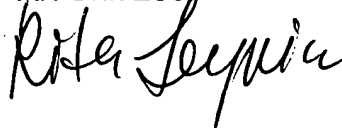
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Leykin whose telephone number is (571)272-2066. The examiner can normally be reached on Monday-Friday 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571)272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rita Leykin
Primary Examiner
Art Unit 2837



R.L.